MODIS Team Meeting Minutes

Minutes of the MODIS Team Meeting held on Tuesday March 1, 1994.

Action Items:

73. Complete the MODIS brochure and released for printing. Assigned to Bauernschub 10/18/93. Due 11/15/93.

74. Prepare and submit a Configuration Change Request which revises the definition and impact of levels of software criticality for the MODIS Software Management Requirements Document. Assigned to Anderson 10/26/93. Due 12/ 1/93

75. Determine if the four electronic module boxes can be individually thermal tested in air, or must the thermal testing be done in a vacuum. Assigned to Silva 10/26/93. Due 11/ 9/93

84. Review the Performance Verification Plan with a goal to delete some activities. Assigned to Roberto 2/15/94. Due 3/ 1/94.

85. Submit a CR to split the Software Readiness Review into two reviews. Assigned to K. Anderson 2/15/94. Due 3/ 1/94.

The following items were distributed:

1) Weekly Status Report #127
2) SBRC Memos submission from week #119
3) Minutes of the previous team meeting

Attendees:

✓ Dick Weber	Bruce Guenther	✓ Larissa Graziani
✓ John Bauernschub	✓ George Daelemans	Bob Martineau
✓ Rosemary Vail	John Barker	✓ Bob Silva
Lisa Shears	Joann Harnden	Ken Brown
✓ Mike Roberto	✓ Patricia Weir	✓ Robert Kiwak
✓ Nelson Ferragut	Mitch Davis	✓ Harvey Safren
✓ Gene Waluschka	Jack Ellis	✓ Ed Knight
Kate Forrest	✓ Ken Anderson	✓ Harry Montgomery
✓ Bill Barnes	Rick Sabatino	✓ Marvin Maxwell
✓ Les Thompson	Cherie Congedo	✓ Bill Mocarsky, Rick Mills

MODIS Team Meeting and Other Topics 1 March 94

General

Bill Barnes is recuperating from surgery. He is now home from the hospital. We all wish him a rapid recovery.

A memo report on the MODIS Critical Design Review has been prepared. It contains comments by MODIS technical team members. The report is in distribution.

The CDR action item list from Bob Joyce was received on March 3rd. It contains 77 action items. Assignments have been made for action items on the CDR received from the University of Arizona. These actions items are being divided between GSFC and SBRC.

Mitch Davis is on business travel to London and Paris and will return March 14th. Cherie Congedo is on vacation in Hawaii. She will return on March 15th or 22nd.

Optics

Gene Waluschka has gone over the polarization measurement plan. He is deriving the equations to predict intensity at the focal plane as a function of the orientation of the polarizer and degree of polarization of the polarizer. Gene is using a coherency matrix approach. The purpose is to mathematically determine if the test setup for measuring MODIS polarization can provide results which are sufficiently accurate.

Gene believes that polarization should be measured separately for each band and not done by interpolation between bands. The largest problems associated with interpolating between bands are due to the scan mirror and the dichroics. To be sure of what is going on, for at least a number of the bands, these measurements should be made at the top, middle, and bottom of the band.

Gene will be talking with Terry Ferguson at SBRC about the status of the APART stray and scattered light analysis of the scan cavity. GSFC plans to do independent stray light analysis.

We are ready for the SRCA sequence file from SBRC. This can be sent over internet to Gene. GSFC is performing a STOP analysis on the SRCA.

Steve Neeck has SWALES working on a MODIS tolerance analysis in which the translations and rotations of the optical components are provided in global coordinates.

Tim Carnahan is looking into using Pro Engineer for stray light modeling.

Detectors

On February 18th, a telemail message was sent to David Jones regarding the Fanout Detector Assembly (FDA) indium bump failures. The message included questions which were hopefully helpful for the detector personnel trying to solve this problem. Most of the questions were provided by Bob Martineau.

The following was a problem with ETM and was discussed in an early MODIS weekly memo. The bias circuit implementation was such that if a particular wire bond failed "open", extremely high forward bias was placed on the detector. This in turn resulted in large charge injection, some of which migrated into adjacent channel depletion areas and increased their noise and offsets enough to disable them. One bad channel "dominoed" into five or six bad channels! Bob Martineau has been asked to follow up on this just to be certain we do not have a potential problem like this with MODIS.

Mechanics

A meeting on the kinematic mounts was held on Monday, February 28 th in Ken Hinkle's office. Attendees included Steve Brodeur, Brad Parker, Bill Case (telecon), Cherie Congedo, Ken Hinkle, Tom Venator, Nelson Ferragut, Jim Mayor, and Mike Roberto. There was concurrence to apply a fracture control program to the mounts. Action items were assigned to determine new vibration test levels for MODIS based on the Atlas 2AS launch vehicle, determine the number of stress cycles imposed on the kinematic mounts by the MODIS test program, calculate the required nondestructive examination (NDE) inspection criteria based on the test levels and number of stress cycles, and determine and implement the required

NDE program. The meeting was documented in a memo written March 1st by Steve Brodeur. Tom Venator and Nelson Ferragut also signed a copy of this memo.

Tom and Nelson are working hard to provide the inputs necessary to define the NDE inspection criteria. The goal is to have results by close of business on March 8th. Jim Mayor of Swales will use Nelson and Tom's results to calculate the NDE inspection criteria, and Brad Parker of Code 313 will determine and implement the NDE program.

The bottom line is that while fracture control might be a high risk way of getting along with the current design, the more desirable engineering solution is a redesign which removes any concerns about mount failures.

Performance Verification Plan

On February 18, a meeting was held in Bill Barnes office to go over the Performance Verification Plan (PVP). Attendees included Bill Barnes, Harry Montgomery, Les Thompson, Ed Knight, and Mike Roberto. We developed a list of recommendations to start the process of trying to see if the verification program for MODIS could be made any more efficient. Comments from the meeting were sent out on telemail later in the day on February 18th. These comments were faxed to Tom Pagano on February 24th. Bill Barnes and Mike Roberto held a teleconference with SBRC on this topic on February 24th.

On February 24th, Tom faxed to me an advance copy of a memo which will be coming to GSFC on Test and Calibration simplifications. Tom believes "there are several steps we can take to improve efficiency and reduce the amount of testing and calibration necessary for Engineering Model (EM) and Protoflight (PF)".

We will continue to work with SBRC to see if we can reduce the PVP and realize savings. However, we need to keep in mind the real risk we will be adding to the MODIS program if we make substantial cuts in the PVP.

MSAP

Members of the MODIS Characterization Support Team (MCST) have concerns about the restrictive use of the MODIS Systems Analysis Program (MSAP). I talked with Tom Pagano on this issue on March 4th. Tom is working on the MODIS simulator program. The MODIS simulator program will not be proprietary in any way. Tom believes we will prefer using the simulator program and will probably stop using MSAP. The proprietary nature of MSAP should become a mute point.

The MODIS simulator program will do all that MSAP will do and more in terms of simulating the output of the instrument as a function of the input scene. The simulator output can be provided as input to ground processing software to check this software. The simulator will be easier to use than MSAP.

At this time, it would be a significant effort for Tom to rewrite MSAP as a non-proprietary program. Tom also believes we have gotten beyond the design phase where MSAP was most useful. Status on the MODIS simulator program will be given at the QMR in late March.

STOP Analysis

If hygroscopic effects are negligible and one half the gravity release is RSSed with the other effects (assumes SBRC can take out most of the 1G release effect), then the STOP analysis prediction is that most of the registration numbers will meet budget. Where budget values are not met, they are out by a few microns. However, Cherie Congedo and Wayne Pierre believe the loads on the intermediate radiator shield may be very large and the shield may buckle. If this occurs, the misregistration of the bands may be similar to Cherie's original prediction. Cherie has documented her work in a memo which is dated 1 March 94. More analysis will be done in this area.

Thermal

George Daelemans will be doing a thermal analysis based on planned maneuvers of the spacecraft to look at the moon. George will determine what maneuvers are currently planned before starting this work. Some parametric studies for parts of the analysis may be possible.

Lonny Kauder by mid April should be ready to make thermal total hemispherical emittance measurements of test samples of the radiant cooler using his Thermal Coating Section lab in building 7. There is the possibility that the Advanced Development and Flight Experiment Section lab in building 4 could be used to make conductivity measurements. The goal is to have measured values of the properties of the radiant cooler to improve the accuracy of the thermal model and to better understand test results when the radiant cooler is tested.

Mike Roberto March 4, 1994